

ARCADIS

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Subject: Placement of lines on the Slot Pond liner using orange paint

Dear Mr. Rodriguez:

Atlantic Richfield (AR) strives to be proactive with the Bird Deterrence program for the Yerington site, constantly working to reduce losses of birds. As a result, the bird mitigation program has been very successful. However, we strive for continuous improvement and the recent loss of a grebe that arrived in the night at the Slot pond led to internal discussions and a proposal to enhance the deterrents at that pond. AR is proposing to test and possibly adopt a new deterrent at the Slot Pond to supplement the current ones in place that are part of the program approved by the United States Environmental Protection Agency (EPA). The proposed bird deterrent is to paint brightly colored orange line-patterns consisting of vertical and horizontal lines on the Slot pond liner. A summary justifying and describing the approach, and the intended outcome of this deterrent is provided below.

The primary goal of the proposed deterrent is to show more clearly the Slot ponds limited pond area with water, which might discourage birds from choosing to land on the small pond. The black liner and dark water are difficult to differentiate and the orange patterns on the liner will make this demarcation clearer. Loons require up to 200 m as the distance to run on top of the water before taking off, though with wind it can be reduced to 30 m (Evers et al. 2010). Diving ducks and grebes similarly need a long runway to take off when winds are low. The Slot pond is small (about 80 m x 70 m) with steep sides, making it difficult for these birds to exit the pond easily. The orange line-patterns hopefully will show that the runway for exiting is small and too much work to land on and take off from.

The secondary goal of the deterrent is to utilize bright colors placed in ways that may reduce the overall attractiveness of the Slot pond to waterbirds. Bright colors such as orange are warning colors that might deter waterbirds. One study concluded that orange was the most effective and consistent color of water that delayed mallards from entering that water (Lipcius et al. 1980). The color orange

ENVIRONMENT

Date:
19 November 2015

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has been used effectively for bird deterrence to appear like flames (range fire) in different applications, which we intend to emulate through our line patterns. The initial patterns painted on the liner are proposed to be orange, which might reduce the use of the pond, motivating the birds to seek alternate landing locations. Depending on how our team perceives success using orange, other colors or combinations may be applied to the pond liner.

The paint selected for the initial lines is orange standard Krylon or Rustoleum brand solvent-based marking paint in 15 oz. aerosol cans. These paints have already been used to mark the liners on all site ponds. In the past staff and liner installers have used this paint type to mark depth gauges, and thus no new damage is expected from use of this paint. Painting may have to be re-applied periodically if it wears off.

The effectiveness of the painted liner will be monitored by on-site bird monitoring staff for at least 6 months. They will be instructed to observe behavioral responses of birds to the modified liner. The deterrent will initially be installed only on the Slot Pond, and may be expanded to additional ponds if the method produces noticeable, intended effects. At the end of 6 months the AR team will decide if the deterrent should be continued, modified, or discontinued.

While some studies document bird aversion to bright colors, results are highly variable and species-specific. For these reasons, the expected effectiveness of the proposed deterrent is difficult to predict. However, given the limited space available near the ponds for additional deterrent installation, the relatively low cost in labor and supplies of this paint deterrent, and the low levels of impact on the surrounding environment, AR believes it is well-worth exploring the use of the proposed paint-based deterrent.

We are interested in any feedback you may have on the new bird deterrent proposed here for installation at Yerington Mine Site. If you agree with the above plan, I would appreciate receiving an e-mail directing us to proceed with the test. Thank you.

Sincerely,

A handwritten signature in black ink that reads "Carolyn Meyer". The script is cursive and fluid, with the first name "Carolyn" and last name "Meyer" clearly distinguishable.

Carolyn Meyer, Ph.D.
Technical Expert/Ecologist, ARCADIS

References

Evers, David C., James D. Paruk, Judith W. McIntyre and Jack F. Barr. 2010. Common Loon (*Gavia immer*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/313doi:10.2173/bna.313>.

Lipcius, R.N., C.A. Coyne, B.A. Fairbanks, D.H. Hammond, P.J. Mohan, D.J. Nixon, J.J. Staskiewicz and F.H. Heppner. 1980. Avoidance response of mallards to colored and black water. *J of Wildlife Management*, 44(2): 511-518.

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